# Environmental Product Declaration

In accordance with ISO 14025:2006, EN 15804:2012+A2:2019/AC:2021 and ISO 21930:2017 for

## EXTOSEAL ENCORS

### Waterproof sealing tape

### for interior and exterior use

from

### pro clima – MOLL bauökologische Produkte GmbH

Products covered by this EPD:
EXTOSEAL ENCORS (width: 0.1 m / length: 20 m) GTIN 4026639153616
EXTOSEAL ENCORS (width: 0.15 m / length: 20 m) GTIN 4026639141347
EXTOSEAL ENCORS (width: 0.2 m / length: 20 m) GTIN 4026639141354
EXTOSEAL ENCORS (width: 0.3 m / length: 20 m) GTIN 4026639147325



| | |
|---|---|
| Programme: | The International EPD System, www.environdec.com |
| Programme operator: | EPD International AB |
| Type of EPD | EPD of a specific product |
| EPD registration number: | EPD-IES-0032697:001 |
| Version date | 30/09/2026 |
| Validity date | 30/09/2031 |

*An EPD may be updated or depublished if conditions change. To find the latest version of the EPD and to confirm its validity, see www.environdec.com*

# General information

**Programme information**

| | |
|---|---|
| Programme: | The International EPD System |
| Address: | EPD International AB<br>Box 210 60<br>SE-100 31 Stockholm<br>Sweden |
| Website: | www.environdec.com |
| E-mail: | support@environdec.com |

**Product Category Rules (PCR)**

CEN standard EN 15804 and ISO Standard ISO 21930 serve as the Core Product Category Rules (PCR)
Product category rules (PCR): PCR 2019:14 Construction Products, version 2.0.1

UN CPC code: No. 36920: "Self-adhesive plates, sheets, film, foil, tape, strip and other flat shapes, of plastics"

PCR review was conducted by: The Technical Committee of the International EPD System. A full list of members is available on www.environdec.com. The review panel may be contacted via support@environdec.com. Chairs of the PCR review: Rob Rouwette (chair), Noa Meron (co-chair).

**Third-party verification**

Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:

☑ Individual EPD verification without a pre-verified LCA/EPD tool
Third party verifier: Jan Weinzettel, weinzettel@seznam.cz
Approved by: The International EPD System

Procedure for follow-up of data during EPD validity involves third-party verifier:

☐ Yes ☑ No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but published in different EPD programmes, may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same first-digit version number) or be based on fully aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterisation factors); and be valid at the time of comparison.

For further information about comparability, see EN 15804 and ISO 14025.

# Information about EPD owner

**Owner of the EPD**
pro clima / MOLL bauökologische Produkte GmbH
Rheintalstr. 35-43 – 68723 Schwetzingen – Germany
T: +49 (0) 62 02 – 27 82.0; info@proclima.com

**Contact**
Michael Förster: support@proclima.com

**Life Cycle Assessment (LCA)**
LCA accountability: Jannik Schulz, María Díaz Cáceres
brands & values GmbH, info@brandsandvalues.com

**Description of the organisation**
pro clima is a pioneer in the intelligent, reliable sealing of building envelopes. The company develops and markets product systems for achieving maximum protection against moisture damage to structures and mould:

- Humidity-variable hydrosafe® high-performance vapour check and airtightness membranes for interior sealing on new buildings and renovation projects.
- Roofing underlays and breather membranes (WRBs) with active moisture transport for permanently protected exterior sealing of roofs and walls.
- Special adhesives and waterproof tapes.
- Sealing grommets as detailed solutions.

**Highest quality for optimal performance**

- The system products are manufactured using state-of-the-art production processes at leading production facilities in Germany.
- Production is subject to the highest quality standards, ensuring that insulation is reliably protected against moisture damage and mould.
- Highest effectiveness of thermal insulation.
- Reduction of heating costs due to optimal air sealing.
- Dry insulation materials.
- Best possible protection against moisture damage to structures and mould.
- Comfortable interiors in summer and winter.
- Healthy indoor climates.

**Together towards a successful future**
People are the focus of every decision at pro clima, and the company's guiding mission is to advance building culture as a whole. To achieve this goal, system products have been developed for over 30 years that are consistently geared to meet the health and comfort needs of users. Many of pro clima's pioneering developments are now established as state-of-the-art approaches. Today, these products are successfully used in over 40 countries worldwide.

**Product-related or management system-related certifications**
All production sites are ISO 9001 certified.

# Product information

**Product name**
EXTOSEAL ENCORS

**Product identification**
Waterproof sealing tape, for interior and exterior use

**Visual representation of the product**






**UN CPC code**
No. 36920: "Self-adhesive plates, sheets, film, foil, tape, strip and other flat shapes, of plastics"

**Products covered by this EPD**
EXTOSEAL ENCORS (width: 0.1 m / length: 20 m) GTIN 4026639153616
EXTOSEAL ENCORS (width: 0.15 m / length: 20 m) GTIN 4026639141347
EXTOSEAL ENCORS (width: 0.2 m / length: 20 m) GTIN 4026639141354
EXTOSEAL ENCORS (width: 0.3 m / length: 20 m) GTIN 4026639147325

This EPD declares a single product – EXTOSEAL ENCORS – despite covering multiple GTINs. While all variants are fundamentally the same product, they differ only in their dimensions. These variations meet specific customer requirements but do not alter the product's core environmental characteristics, thus justifying a unified EPD.

**Product description**
EXTOSEAL ENCORS has the following components:
Backing: Elastic PE carrier film; Main component: Butyl rubber modified with acrylate; Release film: Silicone-coated PE film.

**Applications**
For creating a sub-sill, for sealing window joints with masonry or concrete structures, for sealing wood-based panels to smooth mineral surfaces, for taping underlay panels made of wood fibre to one another (e.g. in roof valleys and transitions), and for sealing these to adjoining structural elements.

**Properties**
Excellent protection for building structures thanks to strong sealing effect. Reliable application: extremely high adhesive strength even to slightly damp and cold subsurfaces. Easy to work with: very elastic - can adapt flexibly to subsurfaces and corners. Proven resistance to driving rain up to 2400 Pa. Independently confirmed suitability: tests in accordance with MO-01/1 passed at IFT in Rosenheim, Germany. Subsequent work can be started quickly: adheres to stable mineral subsurfaces without primers. Excellent values in hazardous substance testing, has been tested according to the ISO 16000 evaluation scheme.

**Name and location of production site(s)**
Manufacturer: pro clima / MOLL bauökologische Produkte GmbH
Location of manufacturing sites: The Netherlands, Romania and Germany
The declared product is manufactured at three production sites in the Netherlands, Romania and Germany under contract for pro clima / MOLL bauökologische Produkte GmbH. The cities is not disclosed in this public EPD for reasons of commercial confidentiality, as publication would reveal commercially sensitive supply chain information. The exact production sites are documented in the background report and have been made available to the independent verifier. Final warehouse and quality control: pro clima / MOLL bauökologische Produkte GmbH, Schwetzingen, Germany
Further information can be found under https://proclima.com/

## Technical specifications

| Property | Regulation | Value |
|---|---|---|
| Colour | N/A | Butyl rubber: grey; film: black |
| Surface weight | EN 1849-2 | 1.9 kg/m² ; 6.23 oz/ft² |
| Thickness | EN 1849-2 | 1.1 mm ; 43 mils |
| $s_d$ value | EN 1931 | > 200 m |
| g value | N/A | > 1 000 MN·s/g |
| Vapour permeance | ASTM E 96 | < 0.03 US perms |
| Outdoor exposure | N/A | 6 months |
| Resistance to driving rain | Innovation Center Iceland | Up to 2400 Pa, around window |
| Resistance to driving rain | ift, MO-01/1:2007-01, Abs. 5 | Up to 600 Pa, sub-sill flashing |
| Application temperature | N/A | -10 °C to 35 °C ; 14 °F to 95 °F |
| Temperature resistance | N/A | Permanent -40 °C to 80 °C ; -40 °F to 176 °F |
| Storage | N/A | Cool and dry |

# Content declaration

The content declaration refers to the declared unit of 1m² of EXTOSEAL ENCORS vapor barrier tape

| Product components | Weight, kg | Post-consumer recycled material, mass-% of product | Biogenic material, mass-% of product | Biogenic material, kg C/product or declared unit |
|---|---|---|---|---|
| Butyl rubber | 1.460 | 0.0% | 0.0% | 0 kg C/kg |
| Adhesives | 0.150 | 0.0% | 0.0% | 0 kg C/kg |
| Printing ink | 0.001 | 0.0% | 0.0% | 0 kg C/kg |
| Total product | 1.611 | 0.0% | 0.0% | 0 kg C/kg |
| **Packaging materials** | **Weight, kg** | **Mass-% (versus the product)** | **Biogenic material, mass-% of product** | **Biogenic material, kg C/product or declared unit** |
| Film (PE) | 0.092 | 5.0% | 0.0% | 0 kg C/kg |
| Cardboard | 0.116 | 6.3% | 2.6% | 0.048 kg C/kg |
| Paper | 0.003 | 0.1% | 0.1% | 0.001 kg C/kg |
| Pallet | 0.039 | 2.1% | 1.1% | 0.02 kg C/kg |
| Total packaging | 0.250 | 13.5% | 3.7% | 0.069 kg C/kg |
| **TOTAL Product with packaging** | **1.861** | | **3.7%** | **0.069 kg C/kg** |

The biogenic carbon content of product and packaging is 0.253 kg $CO_2$ eq. per declared unit.

| Dangerous substances from the candidate list of SVHC for Authorisation | EC No. | CAS No. | Weight-% per functional or declared unit |
|---|---|---|---|
| None | Not applicable | Not applicable | Not applicable |

# LCA information

The EPD conducted is for the specific product EXTOSEAL ENCORS vapor barrier tape

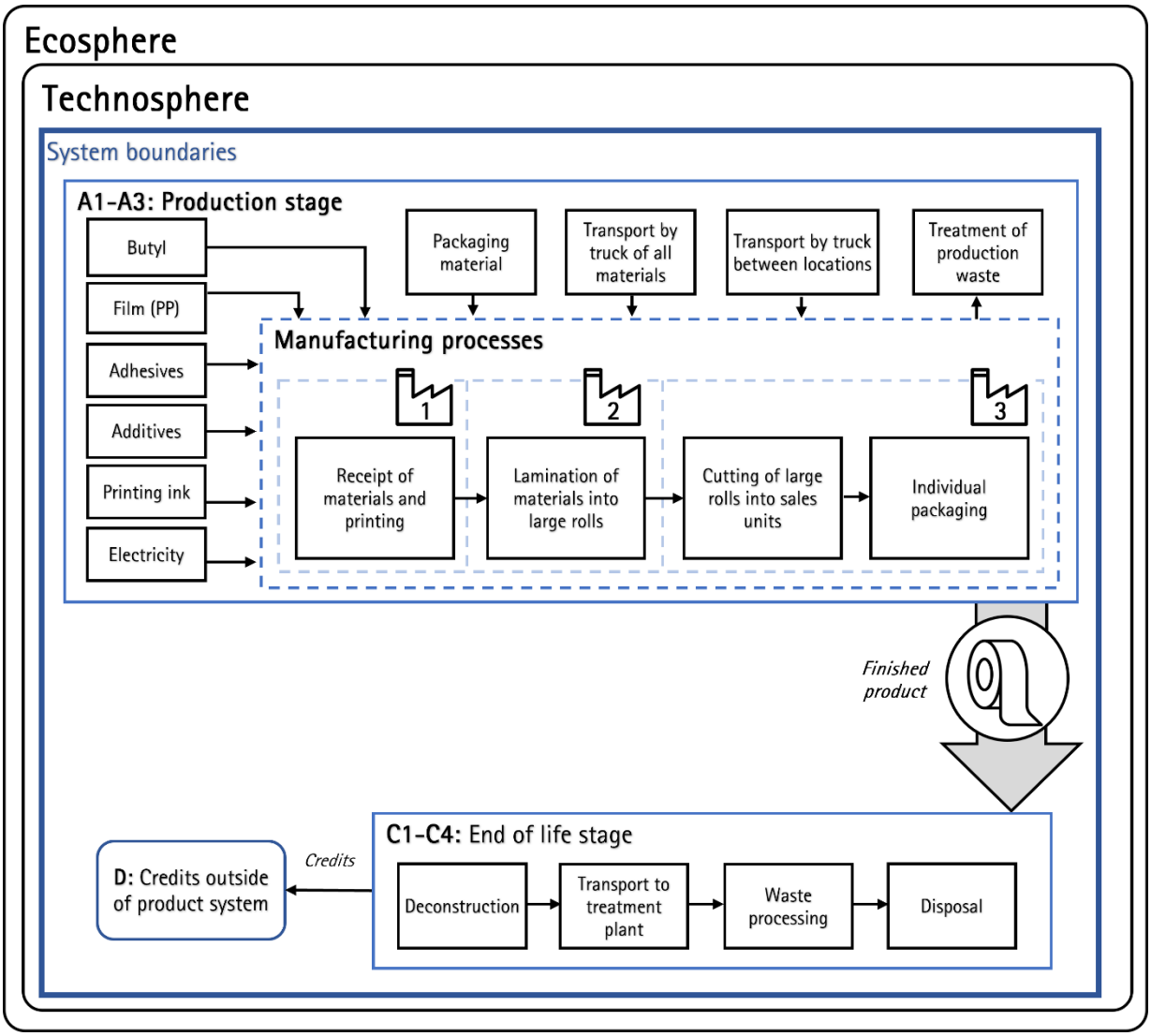
**Declared unit:** 1m² of EXTOSEAL ENCORS vapor barrier tape
**Conversion factor to mass:** 1.6108 kg/m²
**Reference service life:** 100 years
**Time representativeness:** Based on yearly manufacturing data from 01/01/2023 until 31/12/2023.
**Geographical Scope:** Global
**Database and LCA software used:** For the LCA model, the software system for holistic balancing (LCA for Experts) version 10.9 was used. Background data sets from the current version of the LCA for experts (GaBi) database service pack 2026.1 were used entirely. EN 15804 +A2 (based on EF 3.1) and TRACI 2.2. characterisation factors provided in LCA for Experts were applied

**Description of the manufacturing processes:**
EXTOSEAL ENCORS waterproof sealing tape is produced by bonding the backing film and a layer of butyl rubber modified with acrylate, and attaching the release film to create large rolls. These rolls are printed and cut into smaller rolls of tape, which are the sales units. These rolls are then packaged and sent for storage and distribution, first to the central warehouse in Germany, and then all over the world for further sale.

**Description of system boundaries:**
a) "Cradle to gate with modules C1–C4 and module D"

- The entirety of non-woven fleece polypropylene was modelled as primary material to account for a worst-case scenario.
- All processing steps and locations are balanced within the system boundaries.
- The LCI data manufacturing data was gathered for the specific declared product, and no co-product allocation was necessary.
- The allocation of waste follows the polluter-pays principle. The system boundary to the next product system is set when the waste reaches the end-of-waste state. The impacts of waste treatment from production are included in Module A3. The impacts of waste treatment during end-of-life are included in Module C, where the product reaches the end-of-waste status.
- All the LCI data in Modules A2-A3 corresponds to primary data collected from the manufacturing plant and contracted suppliers, including material and energy inputs, and waste and emission outputs.
- Modules A4, A5 and B1–B7 are not declared.

System diagram:




Description of scenarios
The system boundaries cover the following modules:

A1. Raw Material Supply

- Extraction and processing of raw materials required for manufacturing the declared adhesive tape: Butyl, film (PE), adhesive, additives and printing ink.
- Extraction and processing of raw materials required for packaging the 1 m² of finished product. This includes the release paper, which is found between the layers of tape, and the roll core which holds the structure of the tape roll. The materials are: Paper, silicone, cardboard, film (PE) and pallet.
- Extraction and processing of raw materials required for internal packaging, referring to packaging for the transportation of the semi-finished product between all locations depicted in the system diagram (#1 to #3). Internal packaging includes cardboard, paper, film (PE), steel, wood and pallet.
- Generation of electricity from primary energy resources to supply the production sites with energy.

A2. Transportation

- Transportation of the raw materials was modelled based on the providers specific locations and transportation via truck to the production location #1 in Germany for printing the PE foil. All materials are procured from providers within less than 800 km.
- The printed foil is transported to the production location #2 in the Netherlands for confection. The large rolls are transported to production location #3 for cutting into sales units, individual packaging and labelling of the sales units. The sales units are then packed with film (PE) for transportation on pallets. The transportation of raw materials for printing in location #1, then to production location #2 and finally for cutting and individual packing in location #3 is modelled in Module A2.

A3. Manufacturing

- The core production processes which are under control of the manufacturer are depicted within the dashed lines in the system diagram. Each processing step within the system boundaries is marked with an icon and number (#1, #2, etc.), indicating the specific production site where it occurs.
- Manufacturing of the defined adhesive tape occurs in the Netherlands, Romania and Germany.
- The production of the large adhesive tape roll is done in the production location #1 and #2, by printing the foil, adding the butyl and adhesive. The rolls are cut into sale units, after confection in the production location #3. The products are then packed on pallets for further transportation.
- Treatment of waste generated from the manufacturing processes is included in the model. The model includes processing up to the end-of-waste status or disposal of final residues including any packaging not leaving the factory gate.
- Electricity for production in module A3 is modelled with the respective Residual electricity mixes of the Netherlands, Romania and Germany.

C1-C4. End of Life

- Module C2 contains the environmental impact of transportation (1.611 kg product, 130 km by truck, Diesel, 20 - 26t gross weight / 17.3t payload capacity, 50% capacity utilisation, volume capacity utilisation factor = 1) of the product to the waste treatment plant.
- The product is treated as waste in module C3 by means of incineration.
- The loads for waste treatment are mapped here until the end of the waste property is reached. Emissions are assigned to module C3.

D. Reuse, recovery, recycling potential

- Module D accounts for potential benefits as material or energy inputs for a downstream product system in the form of the energy recovered from the waste-to-energy treatment and material recovery.
- The value flows resulting from the treatment of waste (Module C3) are accounted for completely in module D as credits outside of product system.

Allocation

The production is modelled with specific data for the declared products; there are no co-products where allocation is needed. The total energy consumption for manufacturing was calculated by the manufacturer based on the maximum power consumption of the equipment, using a conservative approach. For the input of secondary material, the cut-off method is applied. Therefore, secondary materials enter the system under consideration without any environmental loads. This applies to wastepaper for cardboard production in modules A1-A3.

Cut-off criteria

The impact associated with the disregarded mass shares is less than 5% of the impact categories per module. In addition, less than 1% of the total mass and the primary energy used is cut-off. No substances or processes with high environmental relevance were cut-off. The resulting inventory fulfils EN 15804+A2 completeness requirements, covering >99% of total mass and energy inflows and at least 95% per life-cycle stage (A1–A3, C1–C4, D)

Data quality assessment

Primary data include internal production and environmental data, supplier information and energy supply. Data were checked for plausibility and consistency, with attention to completeness and alignment with ISO 14044 requirements. For the upstream processes, generic data was selected. LCI data corresponds to manufacturer-provided data, including material inputs, outputs, and energy demands. The data collection period represents the production year 2023.
Background datasets were selected from Sphera Managed LCA Content databases (Servicepack 2026.1) and are generally not older than 10 years. Overall, the data are considered representative of standard production, with good consistency and completeness.
Overall, data quality is rated as good in accordance with EN 15941, with scores of 1.7 and 2.7 for the specific data and the background datasets used, respectively. There are no inventories with poor data quality.

**Climate impact of energy**

The energy requirement for production has a GWP-GHG value of 0.403 kg CO2e/kWh.

**More information**

- Additional information can be obtained by contacting pro clima at info@proclima.com
- LCA practitioner: brands & values GmbH, info@brandsandvalues.com

**Modules declared, geographical scope, share of specific data (in GWP-GHG indicator) and data variation:**

| | Product stage | | | Construction process stage | | Use stage | | | | | | | End of life stage | | | | Resource recovery stage |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Raw material supply | Transport | Manufacturing | Transport | Construction installation | Use | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | De-construction demolition | Transport | Waste processing | Disposal | Reuse-Recovery- Recycling-potential |
| Module | A1 | A2 | A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
| Modules declared | X | X | X | ND | ND | ND | ND | ND | ND | ND | ND | ND | X | X | X | X | X |
| Geography | RER | RER | RER | | | | | | | | | | GLO | GLO | GLO | GLO | GLO |
| Specific data used* | 11% | | | | | | | | | | | | | | | | |
| Variation – products* | 0% | | | | | | | | | | | | | | | | |
| Variation – sites* | 0% | | | | | | | | | | | | | | | | |

*Based on the GWP-GHG results for modules A1–A3

Modules declared: (X = included; ND = not declared).

The table below presents the processes contributing more than 10% to the GWP-GHG results of life cycle modules A1–A3.

| Process | Source type | Source | Reference year | Data category | Share of primary data, of GWP-GHG results for A1-A3 |
|---|---|---|---|---|---|
| Butyl | Collected data, database | pro clima, ecoinvent (v3.9) | 2023 | Secondary data | 0% |
| Total share of primary data of the processes listed in this table for GWP-GHG results in modules A1-A3 | | | | | 0% |

The share of primary data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that supports the use of more primary data, to increase the representativeness of and comparability between EPDs. Note that the indicator does not capture all relevant aspects of data quality and is not comparable across product categories.

Variation in the results of individual products compared to the representative product is 0%.

# Environmental performance

LCA results of the product(s) - main environmental performance results

EN 15804 +A2 (based on EF 3.1) characterisation factors provided in LCA for Experts were applied. Biogenic CO2 and materially bound primary energy were adjusted manually based on the composition of the declared unit.

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3).

The biogenic carbon and primary energy leaving the product system in module A5 have been balanced out already in modules A1-A3.

Mandatory impact category indicators according to EN 15804

Potential environmental impact – mandatory indicators according to EN 15804

| Results per functional or declared unit | | | | | | | |
|---|---|---|---|---|---|---|---|
| Indicator | Unit | Tot. A1-A3 | C1 | C2 | C3 | C4 | D |
| GWP-fossil | kg $CO_2$ eq. | 1,01E+01 | 0,00E+00 | 2,36E-02 | 4,01E+00 | 0,00E+00 | -1,75E+00 |
| GWP-biogenic | kg $CO_2$ eq. | 1,17E-02 | 0,00E+00 | 2,81E-05 | 4,94E-04 | 0,00E+00 | -8,99E-03 |
| GWP-luluc | kg $CO_2$ eq. | 8,95E-03 | 0,00E+00 | 9,95E-05 | 1,39E-04 | 0,00E+00 | -2,24E-03 |
| GWP-total | kg $CO_2$ eq. | 1,02E+01 | 0,00E+00 | 2,37E-02 | 4,01E+00 | 0,00E+00 | -1,76E+00 |
| ODP | kg CFC 11 eq. | 1,06E-07 | 0,00E+00 | 1,10E-14 | 1,48E-12 | 0,00E+00 | -3,24E-11 |
| AP | mol $H^+$ eq. | 4,24E-02 | 0,00E+00 | 4,60E-05 | 5,24E-04 | 0,00E+00 | -2,29E-03 |
| EP-freshwater | kg P eq. | 2,04E-03 | 0,00E+00 | 5,90E-08 | 7,49E-08 | 0,00E+00 | -8,26E-07 |
| EP-marine | kg N eq. | 7,22E-03 | 0,00E+00 | 1,97E-05 | 1,45E-04 | 0,00E+00 | -6,64E-04 |
| EP-terrestrial | mol N eq. | 7,59E-02 | 0,00E+00 | 2,13E-04 | 2,42E-03 | 0,00E+00 | -7,66E-03 |
| POCP | kg NMVOC eq. | 2,89E-02 | 0,00E+00 | 4,23E-05 | 4,05E-04 | 0,00E+00 | -1,73E-03 |
| ADP-minerals&metals | kg Sb eq. | 3,77E-05 | 0,00E+00 | 1,68E-09 | 1,16E-08 | 0,00E+00 | -2,50E-07 |
| ADP-fossil* | MJ | 2,02E+02 | 0,00E+00 | 3,04E-01 | 1,65E+00 | 0,00E+00 | -2,99E+01 |
| WDP | $m^3$ | 1,22E+01 | 0,00E+00 | 9,45E-05 | 3,81E-01 | 0,00E+00 | -1,46E-01 |
| Acronyms | GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption | | | | | | |

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Potential environmental impact – additional mandatory and voluntary indicators

| Results per functional or declared unit | | | | | | | |
|---|---|---|---|---|---|---|---|
| Indicator | Unit | Tot. A1-A3 | C1 | C2 | C3 | C4 | D |
| GWP-GHG[1] | kg $CO_2$ eq. | 1,02E+01 | 0,00E+00 | 2,37E-02 | 4,01E+00 | 0,00E+00 | -1,75E+00 |
| PM | Disease incidence | 3,83E-07 | 0,00E+00 | 3,89E-10 | 6,06E-09 | 0,00E+00 | -1,89E-08 |
| IR | kBq U235 eq. | 4,62E-01 | 0,00E+00 | 6,24E-05 | 5,48E-03 | 0,00E+00 | -2,93E-01 |
| ETP-fw | CTUe | 5,14E+01 | 0,00E+00 | 2,61E-01 | 1,11E+00 | 0,00E+00 | -3,56E+00 |
| HTP-c | CTUh | 3,21E-09 | 0,00E+00 | 5,18E-12 | 5,41E-11 | 0,00E+00 | -2,97E-10 |
| HTP-nc | CTUh | 8,39E-08 | 0,00E+00 | 2,69E-10 | 4,29E-09 | 0,00E+00 | -7,12E-09 |
| SQP | dimensionless | 3,49E+01 | 0,00E+00 | 8,15E-02 | 3,48E-01 | 0,00E+00 | -5,81E+00 |
| Acronyms | GWP-GHG = This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO2 is set to zero; PM = Particulate matter emissions; IR = Ionizing radiation, human health; ETP-fw = Eco-toxicity - freshwater; HTP-c = Human toxicity, cancer effect; HTP-nc = Human toxicity, non-cancer effects; SQP = Land use related impacts/Soil quality | | | | | | |

[1] This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO2 is set to zero.

Resource use indicators

| Results per functional or declared unit | | | | | | | |
|---|---|---|---|---|---|---|---|
| Indicator | Unit | A1-A3 | C1 | C2 | C3 | C4 | D |
| PERE | MJ | 1,38E+01 | 0,00E+00 | 2,16E-02 | 4,42E-01 | 0,00E+00 | -1,06E+01 |
| PERM | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| PERT | MJ | 1,38E+01 | 0,00E+00 | 2,16E-02 | 4,42E-01 | 0,00E+00 | -1,06E+01 |
| PENRE | MJ | 1,54E+02 | 0,00E+00 | 3,04E-01 | 4,95E+01 | 0,00E+00 | -2,99E+01 |
| PENRM | MJ | 4,79E+01 | 0,00E+00 | 0,00E+00 | -4,79E+01 | 0,00E+00 | 0,00E+00 |
| PENRT | MJ | 2,02E+02 | 0,00E+00 | 3,04E-01 | 1,65E+00 | 0,00E+00 | -2,99E+01 |
| SM | kg | 1,06E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| RSF | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| NRSF | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| FW | $m^3$ | 2,87E-01 | 0,00E+00 | 6,75E-06 | 9,05E-03 | 0,00E+00 | -7,38E-03 |
| Acronyms | PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water | | | | | | |

Waste indicators

| Results per functional or declared unit | | | | | | | |
|---|---|---|---|---|---|---|---|
| Indicator | Unit | A1-A3 | C1 | C2 | C3 | C4 | D |
| Hazardous waste disposed | kg | 6,91E-05 | 0,00E+00 | 1,40E-11 | 9,15E-10 | 0,00E+00 | -2,17E-08 |
| Non-hazardous waste disposed | kg | 8,08E-02 | 0,00E+00 | 5,85E-05 | 3,33E-01 | 0,00E+00 | -1,51E-02 |
| Radioactive waste disposed | kg | 3,51E-04 | 0,00E+00 | 4,78E-07 | 4,14E-05 | 0,00E+00 | -1,92E-03 |

Output flow indicators

| Results per functional or declared unit | | | | | | | |
|---|---|---|---|---|---|---|---|
| Indicator | Unit | A1-A3 | C1 | C2 | C3 | C4 | D |
| Components for re-use | kg | 1,38E-02 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Material for recycling | kg | 3,63E-03 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Materials for energy recovery | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Exported energy, electricity | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 7,26E+00 | 0,00E+00 | 0,00E+00 |
| Exported energy, thermal | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 1,30E+01 | 0,00E+00 | 0,00E+00 |

# Additional environmental information

**TRACI Indicators**

The following TRACI indicators v 2.2 were calculated to comply with US Market requirements. The EPD complies with the ISO 21930:2017 Standard.

These indicators are provided as additional information to the EN 15804+A2 indicators to facilitate the use of this EPD in the North American market. As they are based on the TRACI v2.2 impact assessment method, the results are not directly comparable with the environmental indicators calculated according to EN 15804+A2.

| TRACI | Unit | A1-A3 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|
| TRACI 2.2, Acidification Air | kg SO2 eq. | 3,62E-02 | 0,00E+00 | 4,03E-05 | 1,03E-03 | 0,00E+00 | -1,98E-03 |
| TRACI 2.2, Ecotoxicity (recommended and interim) | CTUe | 2,62E+01 | 0,00E+00 | 3,20E-03 | 9,16E-03 | 0,00E+00 | -9,87E-02 |
| TRACI 2.2, Ecotoxicity (recommended) | CTUe | 1,51E-01 | 0,00E+00 | 1,10E-03 | 3,69E-03 | 0,00E+00 | -5,04E-02 |
| TRACI 2.2, Eutrophication - freshwater | kg P eq. | 9,09E-04 | 0,00E+00 | 2,66E-08 | 3,39E-08 | 0,00E+00 | -3,77E-07 |
| TRACI 2.2, Eutrophication - marine | kg N eq. | 1,17E-02 | 0,00E+00 | 3,10E-05 | 2,82E-04 | 0,00E+00 | -1,06E-03 |
| TRACI 2.2, Global Warming Air, excl. biogenic CO2 | kg CO2 eq. | 9,99E+00 | 0,00E+00 | 2,33E-02 | 4,01E+00 | 0,00E+00 | -1,74E+00 |
| TRACI 2.2, Global Warming Air, incl. biogenic CO2 | kg CO2 eq. | 9,83E+00 | 0,00E+00 | 2,29E-02 | 4,01E+00 | 0,00E+00 | -1,74E+00 |
| TRACI 2.2, Human Health Particulate Air | kg PM2.5 eq. | 6,35E-03 | 0,00E+00 | 1,64E-06 | 3,22E-05 | 0,00E+00 | -1,07E-04 |
| TRACI 2.2, Ozone Depletion Air | kg CFC 11 eq. | 1,12E-07 | 0,00E+00 | 1,40E-14 | 1,83E-12 | 0,00E+00 | -4,01E-11 |
| TRACI 2.2, Photochemical Oxidation Formation | kg O3 eq. | 4,39E-01 | 0,00E+00 | 8,20E-04 | 8,41E-03 | 0,00E+00 | -3,59E-02 |
| TRACI 2.2, Human toxicity, cancer (recommended and interim) | CTUh | 4,35E-07 | 0,00E+00 | 1,64E-11 | 1,85E-10 | 0,00E+00 | -5,30E-10 |
| TRACI 2.2, Human toxicity, cancer (recommended) | CTUh | 3,07E-10 | 0,00E+00 | 1,09E-13 | 2,15E-11 | 0,00E+00 | -2,12E-10 |
| TRACI 2.2, Human toxicity, non-canc. (recommended and interim) | CTUh | 1,50E-06 | 0,00E+00 | 2,14E-09 | 2,76E-08 | 0,00E+00 | -7,22E-08 |
| TRACI 2.2, Human toxicity, non-canc. (recommended) | CTUh | 1,77E-09 | 0,00E+00 | 2,25E-13 | 4,14E-13 | 0,00E+00 | -6,20E-12 |

# Abbreviations

| | |
|---|---|
| CAS No. | Chemical Abstracts Service Number |
| CEN | European Committee for Standardization |
| CFC-11 eq. | Chlorofluorocarbon-11 Equivalents |
| CO2 eq. | Carbon Dioxide Equivalents |
| EF 3.1 | Environmental Footprint 3.1 characterization factors |
| EN | European Norm (Standard) |
| EPD | Environmental Product Declaration |
| EU | Europe |
| GLO | Global |
| GPI | General Programme Instructions |
| ISO | Internation Organization for Standardization |
| kg | Kilogram |
| kg C | Kilograms of Carbon |
| kg CO2 eq. | Kilograms of Carbon Dioxide Equivalent |
| LCA | Life Cycle Assessment |
| LCI | Life Cycle Inventory |
| m3 | Cubic Meter |
| MJ | Megajoule |
| MNR | Module Not Relevant |
| N eq. | Nitrogen Equivalents |
| ND | Not Declared |
| NMVOC | Non-Methane Volatile Organic Compounds |
| P eq. | Phosphorus Equivalents |
| PCR | Product Category Rules |
| RSL | Reference service life |
| Sb eq. | Antimony Equivalents |
| SVHC | Substances of Very High Concern |
| Environmental impact indicators (EN 15804) | |
| GWP | Global Warming Potential |
| GWP-GHG | Global Warming Potential for greenhouse gases (kg CO2 eq) |
| EP | Eutrophication Potential |
| GWP-total | Total Global Warming Potential(kg CO2 eq.) |
| GWP-fossil | Global Warming Potential from fossil (kg CO2 eq.) |
| GWP-biogenic | Global Warming Potential biogenic (kg CO2 eq.) |
| GWP-luluc | Global Warming Potential land use and land use change (kg CO2 eq.) |
| ODP | Ozone Depletion Potential (kg CFC-11 eq.) |
| AP | Acidification potential,(mol H+ eq.) |
| EP-freshwater | Freshwater eutrophication potential (kg P eq.) |
| EP-marine | Marine eutrophication potential (kg N eq.) |
| EP-terrestrial | Terrestrial eutrophication potential (mol N eq.) |
| POCP | Photochemical Ozone Creation Potential (kg NMVOC eq.) |
| ADP | Abiotic Depletion Potential |
| ADP-minerals&metals | Abiotic depletion potential for non-fossil resources (kg Sb eq.) |
| ADPF | Abiotic depletion potential for fossil resources (MJ) |
| WDP | Water Deprivation Potential ($m^3$) |
| PERE | Renewable primary energy (excluding as raw materials) (MJ) |
| PERM | Renewable primary energy used as raw materials (MJ) |
| PERT | Total renewable primary energy (MJ) |
| PENRE | Non-renewable primary energy (excluding as raw materials) (MJ) |
| PENRM | Non-renewable primary energy used as raw materials (MJ) |
| PENRT | Total use of non-renewable primary energy resources (MJ) |
| SM | Use of secondary material (kg) |

| | |
|---|---|
| RSF | Use of renewable secondary fuels (MJ) |
| NRSF | Use of non-renewable secondary fuels (MJ) |
| FW | Use of net fresh water (m3) |
| HWD | Hazardous waste disposed (kg) |
| NHWD | Non-hazardous waste disposed (kg) |
| RWD | Radioactive waste disposed (kg) |
| CFR | Components for Reuse (kg) |
| MR | Material for Recycling (kg) |
| MER | Materials for Energy Recovery (kg) |
| EEE | Exported Energy, Electricity (MJ) |
| EET | Exported Energy, Thermal (MJ) |

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# Version history

**Version 1, 2026-09-30:** Original Version of the EPD

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